APPLICATION OF ECOLOGICAL, GEOLOGICAL AND OCEANOGRAPHIC ERTS-1 IMAGERY TO DELAWARE'S COASTAL RESOURCES PLANNING

Identification of Coastal Vegetation Species in ERTS-1 Imagery

V. Klemas
D. Bartlett
College of Marine Studies
University of Delaware
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V. Klemas
D. Bartlett
College of Marine Studies
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SUMMARY

Coastal vegetation species appearing in the ERTS-1 image taken of the Southern Coast of Delaware, during orbit 333 on August 16, 1972, have been correlated with ground truth vegetation maps, and imagery obtained from high altitude RB-57 and U-2 overflights. The vegetation maps of the entire Delaware Coast were prepared during the month of August, including the day of the satellite overpass, using data collected on foot, in small boats, and from low altitude aircraft. Multispectral analysis of high altitude RB-57 and U-2 photographs indicated that five vegetation species could be clearly discriminated from 60,000 feet altitude, including, 1) salt marsh cord grass (Spartina alterniflora), 2) salt marsh hay and spike grass (Spartina patens and Distichlis spicata), 3) reed grass (Phragmites communis), 4) high tide bush and sea myrtle (Iva species and Baccharus halimifolia), and 5) a group of fresh water species found in impounded areas built to attract water fowl. All of these species are shown in fifteen overlay maps, covering all of Delaware's wetlands prepared to match the USGS topographic map scale of 1:24,000.

Major Spartina alterniflora and Spartina patens communities within the tidal marshes can be identified in the ERTS-1 imagery. Phragmites, and other species however, occur in smaller, more dispersed groupings and are difficult to discriminate within the resolution capability of the ERTS-1 scanner. Similarly, major impounded areas, built to attract water fowl can be detected; however, mosquito drainage ditches, covering many of Delaware's marshes, are too narrow and not long enough to be resolved by ERTS-1 sensors. High-marsh and dune communities dominated by high tide bush (Iva frutescens) and sea myrtle (Baccharus halimifolia) can be distinguished from adjacent maritime forest and beach grass communities.